

ADDITIONAL NOTES ON THE GENUS CARYOPTERIS (VERBENACEAE). III

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Previous installments of notes on this genus were in *Phytologia* 52: 415--437 & 452--490 and 53: 146--164.

CARYOPTERIS Bunge

Additional & emended bibliography: Hance, *Journ. Linn. Soc. Lond. Bot.* 8: 144. 1885; Anon., *Journ. Linn. Soc. Lond. Bot. Gen. Index* 79. 1888; Mold., *Suppl. List Comm. Vern. Names* 4 & 15. 1940; Bean in Syngé, *Roy. Hort. Soc. Dict. Hort.*, ed. 2, 1: 405--406. 1956; Rouleau, *Repert. Nom. Gen. Ind. Kew.* 56, 479, & 480. 1981; Mold., *Phytologia* 52: 501, 502, 504, & 507--509 (1983) and 53: 146--164. 1983.

CARYOPTERIS CHOSENENSIS Mold.

Additional & emended bibliography: Bean in Syngé, *Roy. Hort. Soc. Dict. Hort.*, ed. 2, 1: 405. 1956; Mold., *Phytologia* 53: 146. 1983.

CARYOPTERIS xCLANDONENSIS Simmonds

Additional & emended bibliography: Bean in Syngé, *Roy. Hort. Soc. Dict. Hort.*, ed. 2, 1: 405. 1956; Mold., *Phytologia* 53: 146 & 159. 1983.

CARYOPTERIS INCANA (Thunb.) Miq.

Additional & emended bibliography: Hance, *Journ. Linn. Soc. Lond. Bot.* 13: 116. 1873; Anon., *Journ. Linn. Soc. Lond. Bot. Gen. Index* 79. 1888; Bean in Syngé, *Roy. Hort. Soc. Dict. Hort.*, ed. 2, 1: 405 & 406. 1956; Mold., *Phytologia* 53: 146--155 & 159. 1983.

CARYOPTERIS MONGHOLICA Bunge

Additional & emended bibliography: Bean in Syngé, *Roy. Hort. Soc. Dict. Hort.*, ed. 2, 1: 405 & 406. 1956; Mold., *Phytologia* 53: 152 & 155--162. 1983.

CARYOPTERIS NEPETAEFOLIA (Benth.) Maxim.

Additional bibliography: Mold., *Phytol. Mem.* 2: 277, 379, & 529. 1980; Mold., *Phytologia* 52: 428, 430, 433, 435, & 454 (1983) and 53: 164. 1983.

Illustrations: Matsum., *Icon. Pl. Koisikav.* 1: pl. 50. 1912; Erdtman, *Svensk Bot. Tidsk.* 39: 282, fig. 5. 1945.

A low, perennial, pubescent, gregarious herb with a woody base or a subshrub, 6 inches to 4 feet tall, somewhat aromatic; stems mostly prostrate or decumbent, rarely erect; young branches ascending, pubescent; leaves decussate-opposite, short-petiolate; leaf-blades broadly ovate or rotund-ovate, about 1.5 cm. long and wide, marginally subincised-crenate or coarsely serrate with 3--5 large

teeth on each side, green and pubescent on both surfaces; secondaries about 5 per side; inflorescence axillary, solitary, the cymes 1-flowered; peduncles slender, about 1.3 cm. long, articulate above the middle, 2-bracteolate; bractlets linear, short; calyx about 6 mm. long, larger than in other species of the genus, the rim 5-dentate to 4- or 5-lobed or 4-fid to about the middle, the tube very short, only about 4 mm. long, the lobes ovate, about 6 mm. long, apically acute, 1-veined, pubescent and glandulose on both surfaces; corolla pale-purple, about 1.5 cm. long or to almost 3 times as long as the calyx, sparsely pubescent on both surfaces, the tube about 4 mm. long, the lobes 4, marginally entire, the lower lobe the largest, obovate, apically entire or crisped; stamens 4, inserted near the corolla-throat, long-exserted; filaments basally villous, otherwise glabrous; anther thecae parallel; pistil exserted; style surpassing the stamens, glabrous; stigma-branches rather acute; ovary externally villous at the apex or densely pubescent, 4-lobed, 1-locular, with thick parietal placentae, 2-ovulate; fruiting-calyx enlarged, broadly campanulate, spreading, basally acute; capsule externally hirsute, the valves thickly coriaceous, broad, deeply navicular, apically acute, marginally incurved, the ventral areole half as long and deeply impressed, closed by a longitudinal, carinate, apically adnate, placental pseudoseptum; seed attached below the apex of the pseudoseptum, broadly obovoid, pendent.

This species is based on Fortune A.73 from China, deposited in the Bentham herbarium at Kew. Bentham's original (1848) description is: "?[eucrium] nepetaefolium, herbaceum, humile, pubescens, foliis petiolatis ovatis orbiculatisve subinciso-crenatis, pedunculis axillaribus unifloris, folio florali longioribus, calyce late campanulato herbaceo pubescente semi-5-fido. -- In China (Fortune n. A.73). Caulis erecti, ramosi, semipedales. Folia semipollicaria, utrinque viridia, pubescentia. Pedunculi supra medium articulati, bibracteati. Calyces florentes 3 lin. longi, post anthesin aucti, basi acuti, lobis latis acutis. Corolla calyce subtriplo longior. Stamina longe exserta."

Strictly speaking, the taxon was not validly published by Bentham in the reference quoted above, under the present international code of nomenclature, since he expressed doubt as to its having been placed in the proper genus, the code requiring that a name must definitely accepted by the author when published. Maximowicz (1877) cites a Forbes and a Fortune collection (probably the type collection) and comments that "ob inflorescentiam axillarem fere a basi ramorum incipientem folia superantem et corollae emplas conformationem certe a Eucrii excludendum. Fructu ignoto locus in systemate dubius maneret, nisi corolla simillima esset illi Clerodendri divaricati S. Z., quocum ad Caryopterides amandandum videtur, nisi utrumque in dignitatem genericam eruendum." Thus, it appears that Maximowicz also had some doubts about the correct generic position of this plant.

Franchet (1884) notes that "dans le C. nepetaefolia, les nucules sont seulement plus hérissées, un peu plus allongées, le

réseau des nervures est plus nettement indiqué que dans son congénère japonaise [C. chosenensis]." He cites only a collection from "sur les rochers et au bord des murs" in northern Hupeh, China. Forbes & Hemsley (1890) cite unnumbered collections of Everard and of Forbes from Chekiang.

Erdtman (1945) says that "On pollenmorphological grounds as well as on other evidence, Amethystea coerules L.....ought to be closely related with and, consequently, placed in the same family as Caryopteris nepetaefolia and C. terniflora. Briquet refers Amethystea to Labiatae (1895) and Caryopteris to Verbenaceae (1894). Arguments will not be presented here as to which family these plants should rightly belong. It is evident, however, that an eventual transfer of Caryopteris -- including C. divaricata [= C. chosenensis] -- to Labiatae would lessen the remarkable pollenmorphological uniformity of that family. The triporate condition of the pollen grains in C. divaricata may possibly be regarded as an extreme development of the tricolpate pollen type of C. nepetaefolia just as the apparently triporate grains in Bouchea prismatica etc.....may be regarded as an extreme development of the tricolporate grains in Chascanum." He asserts that C. nepetaefolia belongs in a group with C. chosenensis, C. odorata, C. paniculata, C. siccanes, and C. terniflora (as opposed to the group comprising C. forrestii, C. glutinosa, C. incana, C. mongholica, & C. trichosphaera, which comprise the TRUE genus Caryopteris). In C. nepetaefolia the pollen grains are tricolpate, spheroidal, and with scattered spines.

P'ei (1932) cites Steward 1107 from Anhwei, Borchet s.n., Ching 1356, Steward 5237 & 5404, and Tsoong 3885 from Chekiang, and Faber 30, Keng 1504, Steward 1187 & 5237, and Sun 427 from Kiangsu. He notes that "This plant is related to Caryopteris terniflora Maxim., from which it differs by its prostrate or decumbent (?) habit, solitary flowers, which are much larger than those of C. terniflora, Maxim., and broadly ovate leaves."

Handel-Mazzetti (1934) cites Serre 517 and Smith 6435 from Shansi, China, and Smith 2270 from northern Szechuan. Maximowicz (1886) cites unnumbered collections of David, Forbes, Fortune, and Hancock from central China and Hupeh. In his 1879 work he cites an unnumbered Hancock collection from Ningpo. Moore (1878) cites an unnumbered Everard collection from Ningpo. Hemsley (1876) cites some "very fine specimens from the Te-hoo Lake" area.

Collectors have encountered C. nepetaefolia in very moist shady places, in woods and shaded wood margins, in grasslands, and on steep grassy slopes, at 175--1200 m. altitude, in flower in April and May. In Kiangsu it was found by Keng "in open yards in back of a temple, not common", while in Chekiang, according to Ching, it is "common in very moist shaded places".

The corollas are said to have been "pale-blue" on Beach H.44, "bluish-purple" on Keng 1504, "lavender" on Stewart 1187, "purplish" on Ching 1356, and "red and white" on Chow 66. Stewart reports that in Anhwei the "flowers and leaves are eaten".

Material of C. nepetaefolia has been distributed in some herbaria

as Lebiatae sp. The species, indeed, bears a close similarity habitually to some species of Plectranthus in that family.

Citations: CHINA: Anhwei: Dang & Yao 79063 (N); A. N. Stewart 1107 [Herb. Univ. Nanking 5237] (Ca--234044, W--1279722). Chaki-ang: Barchet s.n. (W--597653); Beach H.44 (W--2070654); Ching 1356 (Ba, Ca--255531, Ca--281706, N--photo, W--1246208, W--1246269); Tsoong 3885 (Ca--252792). Hupeh: Baird s.n. [Avril 1873] (W--2497332); Chow 66 (N). Kiangsu: Faber M.30 (N, N); Keng 1504 (Ca--382755); P'ei 2659 (W--1626897); A. N. Stewart 1187 [Herb. Univ. Nanking 5404] (Ca--243524). Shansi: H. Smith 6435 (S).

CARYOPTERIS ODDORATA (Hamilt.) B. L. Robinson, Proc. Am. Acad. Sci. 51: 531. 1916.

Synonymy: Volkameria odorata Hamilt. ex Roxb., Hort. Beng., imp. 1, 46. 1814. Clerodendron odoratum Buch.-Ham. ex D. Don, Prodr. Fl. Nepal. 102. 1825 [not C. odoratum Vent., 1803]. Volkameria odoratissima Wall., Numer. List 87, no. 1812E, in syn. 1831. Clerodendron odoratum Ham. ex Wall., Numer. List 87, no. 1812, in syn. 1831. Clerodendrum helianthifolium Wall. ex G. Don in Loud., Hort. Brit., ed. 1, 247. 1830. Clerodendron gulmaste Hamilt. ex Wall., Numer. List 87, no. 1812 in syn. 1831. Clerodendron helianthemifolium Wall. ex Steud., Nom. Bot. Phan., ed. 2, 1: 383. 1840. Clerodendron odoratum Buch. ex Voigt, Hort. Suburb. Calc. 466. 1845. Volkameria odorata Roxb. ex Voigt, Hort. Suburb. Calc. 466, in syn. 1845. Caryopteris wallichiana Schau. in A. DC., Prodr. 11: 625. 1847. Clerodendron odoratum D. Don ex Schau. in A. DC., Prodr. 11: 625, in syn. 1847. Volkameria sp. W. Griff., Itin. Notes [Posthum. Papers 2:] 128. 1848. Caryopteris wallichiana Bunge ex Buek, Gen. Spec. Syn. Candoll. 3: 86. 1858. Volkameria odorata [Buch.-Ham.] Roxb. apud Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 2: 1219. 1895. Clerodendron odoratum (Hamilton) D. Don ex B. L. Robinson, Proc. Am. Acad. Sci. 51: 531, in syn. 1916. Caryopteris odorata B. L. Robinson apud A. W. Hill, Ind. Kew. Suppl. 6: 38. 1926. Volkameria odorata Buch.-Ham. ex Mold., Prelim. Alph. List Inv. Names 53, in syn. 1940. Clerodendron odoratum "[Hamilton] D. Don" ex Fedde & Schust, Justs Bot. Jahresber. 60 (2): 571, in syn. 1941. Caryopteris wallichianum Schau. ex MacMill., Trop. Plant. Gard., ed. 5, imp. 1, 104. 1943. Caryopteris wallichiana Grindal, Everyday Gard. India, ed. 16, 183. 1960. Caryopteris odorata "(Buch.-Ham. ex D. Don) B. L. Robinson" apud Suwal, Fl. Phulch. Godaw. 89. 1969. Caryopteris odorata (Roxb.) B. L. Robinson ex Mold., Phytologia 23: 428, in syn. 1972. Caryopteris wallichiana Schau. ex Mold., Phytologia 25: 236, in syn. 1973. Clerodendrum odoratum (Ham.) D. Don ex Jefri & Ghaffoor, Fl. W. Pakist. (mss.) Caryopteris odorata (D. Don) B. L. Robinson, in herb.

Bibliography: Roxb., Hort. Beng., imp. 1, 46. 1814; D. Don, Prodr. Fl. Nepal. 102. 1825; Sweet, Hort. Brit., ed. 1, 1: 322. 1826; Wall., Numer. List [49], no. 1812. 1829; G. Don in Loud.,

Hort. Brit., ed. 1, 247. 1830; Sweet, Hort. Brit., ed. 2, 416. 1830; Wall., Numer. List 87, no. 1812. 1831; G. Don in Loud., Hort. Brit., ed. 2, 247 (1832) and ed. 3, 247. 1839; G. Don in Sweet, Hort. Brit., ed. 3, 550. 1839; Steud., Nom. Bot. Phan., ed. 2, 1: 383. 1840; Voigt, Hort. Suburb. Calc. 466. 1845; Schau. in A. DC., Prodr. 11: 625, 657, & 675. 1847; W. Griff., Itin. Notes [Posthum. Papers 2:] 128. 1848; Buek, Gen. Spec. Syn. Candoll. 3: 86, 106, & 503. 1858; Bocq. in Baill., Adansonia, ser. 1, 3 [Rec. Obs. Bot.]: 208. 1862; Bocq., Rév. Verbenac. 112. 1863; Brandis, For. Fl. NW. Cent. India 370. 1874; Maxim., Bull. Acad. Imp. Sci. St.-Petersb. 23: 389. 1877; Maxim., Mém. Biol. Acad. Sci. St.-Petersb. 9: 829. 1877; Maxim., Bull. Soc. Nat. Mosc. 54 (1): 40. 1879; Gamble, Man. Indian Timb., ed. 1, 299 & 503. 1881; Maxim., Bull. Acad. Imp. Sci. St.-Petersb. 27: 526. 1882; Maxim., Mém. Biol. Acad. Sci. St.-Petersb. 11: 256. 1882; C. B. Clarke in Hook. f., Fl. Brit. India 4: 597. 1885; Watt, Dict. Econ. Prod. India 2: 206. 1889; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 447 & 561 (1893) and imp. 1, 2: 1219. 1895; Briq. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 4 (3a): 178. 1895; Collett, Fl. Simla, imp. 1, 381, fig. 121. 1902; Gamble, Man. Indian Timb., ed. 2, imp. 1, 544. 1902; Prein, Beng. Pl., imp. 1, 2: 836. 1903; Brandis, Indian Trees, imp. 1 & 2, 512. 1906; Duthie, Fl. Upper Gang. Plain 2: 228--229. 1911; B. L. Robinson, Proc. Am. Acad. Sci. 51: 531. 1916; Parker, For. Fl. Punjab, ed. 1, 404. 1918; Collett, Fl. Simla, imp. 2, 381, fig. 121. 1920; Gamble, Man. Indian Timb., ed. 2, imp. 2, 544. 1922; Heines, Bot. Bihar Orissa, ed. 1, 4: 223. 1922; Parker, For. Fl. Punjab, ed. 2, 404. 1924; A. W. Hill, Ind. Kew. Suppl. 6: 38. 1926; Osmaston, For. Fl. Kumaon 413--414. 1927; Stapf, Ind. Lond. 2: 82. 1930; P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 163, 164, & 178--179, pl. 30. 1932; Junell, Symb. Bot. Upsal. 1 (4): 115 & 284. 1934; H. F. MacMill., Trop. Plant. Gard., ed. 4, 104. 1935; Kanjilal, Des. Kanjilal, & De, Fl. Assam 3: 494--495. 1939; Mold., Suppl. List Comm. Vern. Names 15. 1940; Biswas, Indian For. Rec., ser. 2, 3: 41. 1941; Fedde & Schust., Justs Bot. Jahresber. 60 (2): 571. 1941; Mold., Suppl. List Inv. Names 2. 1941; Worsdell, Ind. Lond. Suppl. 1: 190. 1941; Mold., Alph. List Inv. Names 12. 1942; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 54, 56, 71, & 87. 1942; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 1, 104. 1943; Trotter, Common Commerc. Timb. India 229. 1944; Erdtman, Svensk Bot. Tidsk. 39: 283--284. 1945; Mold., Phytologia 2: 95. 1945; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 447 (1946) and imp. 2, 2: 1219. 1946; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 2, 104 (1946), ed. 5, imp. 3, 104 (1948), and ed. 5, imp. 4, 104. 1949; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 125, 131, 157, & 178. 1949; Parss, Fl. Iran 4 (1): 535--536, fig. 252. 1949; Sestri, Wealth India 2 (R): 90. 1950; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 5, 104 (1952), ed. 5, imp. 6, 104 (1954), and ed. 5, imp. 7, 104. 1956; Parker, For. Fl. Punjab, ed. 3, 576. 1956; Iljin, Acad. Sci. Bot. Inst. Dept. Repr. Mat. Hist. Fl. Veg. USSR. 3: 216. 1958; Mold., Résumé 160, 168, 177, 214, 250, 264, 267, 392, & 445. 1959; Grindal, Everyday Gard.

India, ed. 16, 34 & 183. 1960; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 447 (1960) and imp. 3, 2: 1219. 1960; Nath, Bot. Surv. South. Shan States 305. 1960; Puri, Indian For. Ecol. 406. 1960; Haines, Bot. Bihar Orissa, ed. 2, 2: 738 & 758--759. 1961; Rau, Bull. Bot. Surv. India 3: 238. 1961; H. F. MacMill., Trop. Plant. Gard., ed. 5, imp. 8, 104. 1962; Nair & Rehman, Bull. Bot. Gard. Lucknow 76: 21. 1962; Maheshwari, Fl. Delhi 280. 1963; Prain, Bengal Pl., imp. 2, 2: 624. 1963; Sharma, Bull. Bot. Surv. India 6: 101. 1964; Dakshini, Journ. Indian Bot. Soc. 44: 416 & 419. 1965; Maheshwari & Singh, Dict. Econ. Pl. India 35. 1965; Nair, Asia Monog. India 1 (5): [Pollen Gr. W. Himal. Pl.] 35, pl. 12, fig. 154. 1965; G. L. Davis, Syst. Embryol. Angiosp. 271. 1966; Matthew, Bull. Bot. Surv. India 8: 164. 1966; Gupta, Season. Fls. Indian Summer Resorts Moos. 67, 81, & 241. 1967; Patzak & Rech. in Rech., Fl. Iran 43: 8. 1967; R. R. Stewart, Pakist. Journ. Forest. 17: 515. 1967; A. Löve, Taxon 17: 576. 1968; Mold., Résumé Suppl. 16: 9 & 19. 1968; Kapoor, Singh, Kapoor, & Srivastava, Lloydia 32: 303. 1969; Rau, Bull. Bot. Surv. India 10, Suppl. 2: 61. 1969; Sahni, Indian For. 95: 334 & 346. 1969; Suwal, Fl. Phulch. Godaw. 89. 1969; Farnsworth, Pharmacog. Titles 5 (11): iv & item 14140. 1970; Brandis, Indian Trees, imp. 5, 512. 1971; Farnsworth, Pharmacog. Titles 5, Cumul. Gen. Ind. 1971; Mold., Fifth Summ. 1: 267, 269, 271, 272, 287, 294, 356, 422, 423, 446, & 452 (1971) and 2: 734, 856, 971, & 972. 1971; Gamble, Man. Indian Timb., ed. 2, imp. 3, 544. 1972; Hocking, Excerpt. Bot. A. 21: 30. 1972; Mold., Biol. Abstr. 54: 6295. 1972; Rouleau, Taxon Index 1: 72. 1972; V. & H. Singh, Journ. Bomb. Nat. Hist. Soc. 69: 356. 1972; R. R. Stewart, Annot. Cat. in Nasir & Ali, Fl. West. Pakist. 605. 1972; Anon., Biol. Abstr. 56 (3): B.A.S.I.C. S.39. 1973; Mold., Biol. Abstr. 56: 1243. 1973; Hocking, Excerpt. Bot. A.23: 291. 1974; Mold., Phytologia 28: 443 & 448. 1974; Babu, Herb. Fl. Dehra Dun 395 & 396. 1977; Troth & Nicolson, Phytologia 35: 225 & 227. 1977; Mierow & Shrestha, Himal. Fls. 93. 1978; Mold., Phytol. Mem. 2: 255, 257--259, 277, 284, 346, 379, 386, 387, 462, & 529. 1980; Roxb., Hort. Beng., imp. 2, 46. 1980; Brennan, Ind. Kew. Suppl. 16: 58. 1981; Pant, Uniyal, & Prasad, Journ. Bomb. Nat. Hist. Soc. 78: 51. 1981; Mold., Phytologia 52: 429, 430, 433, 466, 467, & 469. 1983.

Illustrations: Collett, Fl. Simla, imp. 1, 381, fig. 121 (1902) and imp. 2, 381, fig. 121. 1920; P'ei, Mem. Sci. Soc. China 1 (3): pl. 33. 1932; Perss, Fl. Iran 4 (1): 536, fig. 252. 1949; Nair, Asia Monog. India 1 (5): [Pollen Gr. W. Himal. Pl.] pl. 12, fig. 154. 1965; Mierow & Shrestha, Himal. Fls. 93 (in color). 1978.

A small to rather large, spreading or straggling, free-flowering shrub, 1--7 m. tall, usually rather bushy, erect or suberect, Buddleia-like in general aspect, often evergreen, mostly nearly glabrous when mature, more or less canescent-pubescent when young; stems reddish; branches tetragonal, ascending, the young shoots densely grayish-pubescent or subtomentose, eventually glabrescent; nodes annulate; bark thin, gray, papery, peeling off in vertical strips; wood dark-gray, moder-

ately hard, with the scent of Prunus avium wood; leaves decussate-opposite, short-petiolate, odorous when crushed; petioles 5--14 mm. long, subglabrous; leaf-blades chartaceous, elliptic or elliptic-ovate to oblong-lanceolate or lanceolate, 3--11 cm. long, 1--4 cm. wide, apically acutely acuminate, marginally crenate-serrate or coarsely serrate, basally cuneate, subglabrous above, canescent-puberulent or pubescent and glandulose beneath; secondaries 4--6 per side; cymes axillary, short and dense, or mostly aggregated in narrow, terminal, cymose thyrsi, 5--12.5 cm. long, 2--3 cm. wide, densely incanous-pubescent throughout, glandulose; bracts linear, 2--2.5 mm. long, or minute, apically acute, pubescent; flowers with a sweet fragrance, sometimes faint; calyx campanulate, 2--4 mm. long, persistent, densely pubescent and glandulose on both surfaces, deeply 5- or 6-lobed or -fid to below the middle, the segments triangular; corolla bilabiate, only bilaterally symmetric, varying from blue, blue-violet, or bluish-purple to light-violet, light-mauve, purplish, lavender, or lilac, sometimes yellow in the throat, sometimes with some white or purplish-white on the lobes, usually externally densely pubescent and glandulose and sparsely pubescent within, the tube 5--12 mm. long, slightly longer than the calyx, basally villosulous, glandulose, the limb spreading, 1.2--2 cm. wide, 5-lobed, the 4 upper lobes oblong or narrowly obovate, subequal, 5--6 mm. long, apically rounded, marginally entire, the 5th (lower) lobe slightly larger, nearly 8 mm. long, broader, mostly darker blue and apically notched or obcordate, marginally entire; stamens 4, didynamous, slightly exserted from the corolla-tube but shorter than the pistil; filaments flexuous, basally densely villous; anthers bilocular, the thecae apically divaricate; style long-exserted; stigma bifid, the branches very short, obtuse; ovary externally pubescent and glandulose, imperfectly 4-locular; fruiting-calyx persistent, divided to the middle, the segments lanceolate, erect, to 6mm. long, each usually 3-ribbed; capsule small, nearly dry, dark-blue or bluish, globose, 3--6 mm. long and wide, externally densely pubescent, somewhat 4-lobed, ultimately separating into 4 concave valves, each winged along one margin and bearing one seed; seeds oblong, erect, exalbuminous; chromosome number: $2n = 40$.

This species is native from northern Pakistan, Nepal, Bhutan, Sikkim, and northern India to Thailand and north to southern China. It is cultivated for ornament in southern Asia, Egypt, Zimbabwe, and elsewhere. The type is presumable from Bengal, collected by Roxburgh in or before 1814.

Wallich (1829, 1831) cites seven collections: one from Nepal, collected by him in 1821, one collected in Oudh in 1825 also presumably by him, one collected by Roxburgh in Kumaon, a cultivated specimen from the Botanical Garden in Calcutta, another from the Madras herbarium, one from Singapore, and one from Patna -- the last two from the Hamilton herbarium. The Madras specimen is the basis of the name, Volkameria odoratissima, and the one from Patna is the type of Clerodendron guilmasta. The Singapore collection is listed by him as Clerodendron odoratum Hamilt.

In addition to the forms and varieties described hereinafter, based on leaf-margin and corolla-color, there are cultivated in India, unnamed, a stiffly erect and a gracefully spreading variety.

The pollen morphology of the species is described by Erdtman (1945) and by Nair & Rehman (1962). Löve (1968) reports the chromosome number as $2n = 40$, based on Mehra & Gill 1022 from Kasauli in the western Himalayas of India.

The wood of C. odorata is used for making walking-sticks and canes in India. The shrub is planted as a hedge around gardens and in parks for its profuse sweet-smelling flowers and dense foliage and was so observed by my wife and myself in New Delhi. It can be propagated by cuttings, but may be severely injured or even killed by severe frosts.

Common and vernacular names recorded for this species include "chingārī", "kāruī", "malet", "mohāni", "moni", "nilo ghusure", "odoriferous clerodendrum", "shechin", and "sunflower-leaved clerodendrum".

Collectors have found this plant growing on open, south-facing slopes, along roadsides in bamboo and Trewia riverine forests, on old landslides with Alnus and Woodfordia fruticosa, on riverbanks, in old fencerows, in Bombax-Ceiba-Trewia nudiflora riverine forests, and in temperate forests in general, from sealevel to 1800 m. altitude, in flower from November to July, as well as in October, and in fruit from May to July.

The corollas are described as having been "blue" on Sabherwal s.n. and Troth 684, "bluish" on Troth 716, "bluish-purple" on Gupte 29, "bluish-violet" on Schneider 431, "blue-purple" on Koelz 4125, "bluish-white" on Singh 5159, "light-violet" on Sahni 5183, "lavender" on Koelz 4399 and Rice 7-78, "purplish" on Qureshi s.n. [8.3.1967], "light-purplish" on Nicolson 2926, "purple" on Qureshi s.n. [10.3.1967], and "purple with a yellow center" on White 110, while Sastri (1950) refers to them as "lilac" in color.

Junell (1934), on the basis of Gamble 25340 in the Kew herbarium, describes the gynoeceum morphology and places the species in the same group in the genus with C. chosenensis, C. nepetaefolia, C. paniculata, C. siccanes, and C. terniflora. The pollen grains are tricolpate, prolate, and thickly beset with minute, faintly sloping, conical elements. Nair & Rehman (1962), on the basis of Natl. Bot. Gard. 9368 and "SI.2624", describe the pollen grains as subprolate, $57 \times 45 \mu$ (range $53-60 \times 42-49 \mu$), the exine surface reticulate. Nair (1965) reports the dimensions as $42 \times 35 \mu$, the exine granulose.

Troth describes the species as a "tall woody herb". Nicolson refers to it as "an occasional tall shrub" in Nepal. Voigt (1845) describes it as having "middle-sized sweet-scented flowers", the corolla "bluish", with an "indigo lip", and lists it from "Patna, Sirapur, Oude, Nepal, [and] Kumaon", flowering in January and February. Maximowicz (1877) describes it as "corolla rubra ad faucem intus villosula lobis omnibus anguste obovatis infimo ma-

jore integro. Filamenta basi dense villosa flexuosa, antherae loculis divaricatis stylusque aequilongus ramis brevissimis obtusis longe exserta. Folia lanceolata acuminata a medio serrata."

Clarke (1885) gives the natural distribution of C. odorata, as known to him, as "Subtropical Himalaya, 0--4500 feet, from the Punjab to Bhotan; frequent". Prain (1903) records it from Bengal. Parker (1924) lists it from Punjab, giving its overall range as "Sub-Himalayan tract and outer Himalaya from the Indus eastward. Common. Ascends to 5,000 feet. Sometimes grown in gardens. Flowers Feb.--April." Osmaston (1927) lists it from Kumaon, where, he avers, it occurs throughout the region between 1000 and 5000 feet altitude, being very common in dry mixed and scrub forests, as well as in blanks (openings) in sal forests. "It is as a rule leafless when flowering." There, he asserts, it flowers from February to April and is in fruit in May and June.

P'ei (1932) cites only Schneider 431 & 477 from Yunnan, China, and comments that "This species is characterized by its terminal cymose panicles, elliptic-ovate leaves, and densely pubescent, glandular ca[p]sules. Its applied [=allied] species are Caryopteris divaricata Maxim. and C. siccanea Smith from which it differs by its densely pubescent inflorescence, and 6-lobed calyx."

Kanjilal and his associates (1939) record C. odorata from Assam, where, he says, it also blossoms from February to April and fruits from May to July. Sastri (1950) reports it as "a common and conspicuous lilac flowered shrub distributed in the outer Himalaya, from the Indus to Bhotan up to 7,000 ft. The wood is moderately hard and dark grey. It has the scent of cherry wood, and is used for making walking sticks." Nath (1960) gives the first record for the species from Burma. Rau (1961) cites his no. 10006 from Uttar Pradesh.

Maheshwari (1963) cites his no. 646 from Delhi, where, he says, the species is "A garden shrub, planted in the hedges of gardens for its profusely produced, sweet-smelling flowers and dense foliage" and where it blooms from January to April. He and Singh (1965) list it among the economic plants of India. Sharma (1964) also lists it among the cultivated plants of India. Dakshini (1965) avers that it is "not so common" in dry soil on stony ridges at Dehra Dun. Matthew (1966) reports it from West Bengal. Gupta (1967) describes the corollas as "white-blue" and asserts that the species grows up to 1300 m. altitude in Uttar Pradesh. Petzak & Reehinger (1967) list it from Baluchistan (Pakistan), giving its general distribution as simply "Montes Himalaya" and commenting that its occurrence in Iran is questionable. Stewart (1967) cites his no. 27434 from Swat; Sehni (1969) records it from Nafa on the basis of Sehni 5183.

Stewart (1972) cites Aitchison 52, Berrett 97, Fleming 597, H8.18446, and Stewart 27434 from Pakistan (Swat, Poonch, West Punjab, etc.) and notes that it is sometimes cultivated in gardens in Rawalpindi. Babu (1977) cites Babu 33838 from Dehra Dun, where he claims it is common in scrub jungles, forest edges, forest clearings, and secondary forests, flowering from January to June.

Pant and his associates (1981) also encountered it in Uttar Pradesh.

Jafri & Ghafoor, in a personal communication, cite from Pakistan: Ali 867, Nesir & Ali 5536, Nesir & Siddiqui 370, Seida s.n., and Stewart 10764 from Hazzana, Lahore, Rawalpindi, and Swat districts, reporting its overall distribution as "Subtropical or outer Himalaya from Pakistan to Bhutan. Common in the low hills of Punjab, and has also been reported from Baluchistan. Sometimes also cultivated as an ornamental." They give its period of anthesis in Pakistan as February to April. Parsa (1949) also lists it from Baluchistan.

Sweet (1826) asserts that Caryopteris odorata was introduced into cultivation in England in 1820 from Nepal. Voigt (1845) lists it as then in cultivation in Calcutta. MacMillan (1943) refers to it as a suitable shrub for arid or sub-desert regions, readily propagated by cuttings. Puri (1960) reports that it was killed or, at least, severely injured in India "by the abnormally excessive frosts of Jan.-Feb., 1905, but in most other years it has been only slightly effected." I personally observed it in outdoor cultivation in Cairo, Egypt, and both my wife and I saw it frequently in gardens in New Delhi in 1973. The material now in the Paradeniya herbarium was cultivated in the Botanical Garden there from seed obtained in Nepal.

Grindal (1960) tells us that there are two distinct types in cultivation in India, both evergreen, one stiff and the other graceful in growth.

It is of interest to note how Indian and Pakistani botanists separate C. odorata from C. foetida, with which it is often confused. According to Parker (1924):

- l. Cymes usually forming a terminal thyrse; fruiting-calyx lobes erect, lanceolate.....C. odorata.
- la. Cymes mostly axillary; fruiting-calyx lobes spreading, triangular.....C. foetida.

According to Osmaston (1927):

- l. Flowers 0.5--0.6 inch in diameter, in cymes arranged in narrow terminal panicles.....C. odorata.
- la. Flowers 0.2 inch in diameter, in axillary cymes, not forming a terminal panicle.....C. foetida.

According to Jafri & Ghafoor (pers. comm.):

- l. Cymes thyrseoid, mostly terminal, elongated; calyx-lobes erect in fruit; capsule pubescent.....C. odorata.
- la. Cymes mostly axillary, short; calyx-lobes spreading in fruit; capsule glabrous.....C. foetida.

The Watt (1889) reference in the bibliography of C. odorata is sometimes mis-dated as "1887". Material has often been misidentified and distributed in herbaria as C. grata Benth., C. incana (Thunb.) Miq., C. mastacanthus Schau., Clerodendron infortunatum L., Clerodendron sp., Volkameria serrata Roxb., and Labiatae sp. On the other hand, the Koelz 4399, Ram 2183, and Stewart 16355, distributed as typical C. odorata, actually represent its var.

integrifolia Mold., while White 110 is C. foetida (D. Don) Thellung, Smitinand 181 is C. paniculata C. B. Clarke, Meebold 3818 is a mixture with Clerodendrum serratum var. wallichii C. B. Clarke, and Konar 84 is not verbenaceous.

Citations: PAKISTAN: Northwestern States: Ali 867 (Kh); Griffith s.n. [Western Himalayas] (Mu--1127); T. Thomson s.n. [alt. 1-5000 ped.] (Mu--1125, Pd). NEPAL: Gupte 29 (Ca--396217); Herb. Hornemann s.n. [e Nepalia] (Cp); Nicolson 2926 (Mi, W--2571601); Rice 7-78 (W--2848416); Troth 716 (W--2826481). BHUTAN: Falconer 754 (Mu--1175, Pd, S, T); Griffith 6018 (Mu--1128, Ut--69332b). INDIA: East Kashmir: Hügel 1127 (V, V); R. R. Stewart 12075 (N, N). East Punjab: Koelz 4125 (Mi, W--1607985); Shaene s.n. [30 Jan. 1956] (Go); R. R. Stewart 1560 (S), 2347 (Ba), 7116 (N). Madhya Pradesh: C. B. Clarke 23707 (W--802875). Sikkim: J. D. Hooker s.n. [1-4000 ped.] (Mu--1124, Pd, S); Meebold 3818 in part (S). Siwalik & Jaunsar: Punj 99 (N). Uttar Pradesh: Brandis 1604 (Mu--1154), 1605 (Mu--1155); N. Gill 394 (B); Koelz 19979 (Bv, N); Singh 213 (Ca--361109, La, N); Strachey & Winterbottom s.n. [Kumaon] (Br). West Bengal: C. B. Clarke 26723 (W--803015); Kurz s.n. [Bengal] (Mu--1121); Roxburgh s.n. (Br--isotype, F--photo of isotype, Ld--photo of isotype, N--photo of isotype, Si--photo of isotype). State undetermined: Aitchison s.n. (Pd); T. Anderson s.n. (Br); Ribu & Rhomoo II (Ca--487255). CHINA: Yunnan: C. K. Schneider 431 (G), 477 (N--photo). CULTIVATED: Burma: O. E. White 110 (N). Egypt: Hassib s.n. [5/4/1928] (Gz), s.n. [17/2/1930] (Gz, Gz, Gz, Gz, Gz, Gz, Gz, Gz), s.n. [29/4/1941] (Gz); Mahdi 4 (Gz), s.n. [15/1/1964] (Gz, Gz, Gz). India: Collector undetermined s.n. (Pd); Herb. Hort. Calcut. 52 (Pd), s.n. (T); Iyer 70 (Au--120934); Krishna s.n. [University Campus, Delhi, 13.12.54] (Dt); Reizade s.n. [Dehra Dun, Jan. 1931] (S), s.n. [New Forest, Feb. 1932] (N); Sabharwal s.n. [1.2.1958] (Kl--4372); Seth s.n. (Tu--147083); Wallich s.n. [H.B.C.] (S). Pakistan: Qureshi s.n. [8.3.1967] (Kh), s.n. [10.3.1967] (Kh, Kh). Sri Lanka: Collector undetermined 125/49 (Pd), s.n. [Students' Garden, R.B.G.] (Pd). Zimbabwe: Fisher s.n. [Govt. Herb. Salisbury. 27815] (Rh). LOCALITY OF COLLECTION UNDETERMINED: Collector undetermined s.n. [6th Feb. 1802] (Pd); A. B. Lambert s.n. [1836] (Br). MOUNTED ILLUSTRATIONS: P'ei, Mem. Sci. Soc. China 1 (3); pl. 33. 1932 (Ld).

CARYOPTERIS ODORATA f. ALBIFLORA (Voigt) Mold., *Phytologia* 22: 6. 1971.

Synonymy: Clerodendron odoratum f. albiflorum Voigt, Hort. Suburb. Calc. 466. 1845.

Bibliography: Voigt, Hort. Suburb. Calc. 466. 1845; Parker, For. Fl. Punjab, ed. 2, 404. 1924; H. F. MacMillan, Trop. Plant. Gard., ed. 5, imp. 1, 104 & 204. 1943; Gupta, Season. Fls. Indian Summer Resorts Moos. 67 & 81. 1967; Mold., Fifth Summ. 2: 856, 971, & 972. 1971; Mold., *Phytologia* 22: 6. 1971; Hocking,

Excerpt. Bot. A.21: 30. 1972; Mold., Biol. Abstr. 54: 6295. 1972; Mold., Phytol. Mem. 2: 347, 387, & 529. 1980; Brenan, Ind. Kew. Suppl. 16: 58. 1981; Mold., Phytologia 52: 433. 1983.

This form differs from the typical form of the species in having white corollas.

The form is based on a specimen collected by Joachim Otto Voigt (1798--1843) in the Calcutta Botanical Garden in or before 1845.

Gupta (1967) records the form from Uttar Pradesh, where it occurs up to 1300 m. altitude. Parker (1924) lists it from Punjab. Both Parker and MacMillan (1943) list it as also cultivated in India, where it is propagated by cuttings.

CARYOPTERIS ODDORATA var. INTEGRIFOLIA Mold., Phytologia 23: 453. 1972.

Bibliography: Mold., Phytologia 23: 453. 1972; Anon., Biol. Abstr. 56 (30): B.A.S.I.C. S.39. 1973; Mold., Biol. Abstr. 56: 1243. 1973; Hocking, Excerpt. Bot. A.23: 291. 1974; Mold., Phytol. Mem. 2: 255, 257, 259, & 529. 1980; Brenan, Ind. Kew. Suppl. 16: 58. 1981; Mold., Phytologia 52: 433. 1983.

This variety differs from the typical form of the species in having its leaves smaller in size, mostly only 3--4.5 cm. long and 1--2 cm. wide during anthesis, usually entire-margined, and mostly more densely and persistently pubescent beneath and the inflorescence densely congested in all the upper leaf-axils as well as terminal on the stems and branches.

The variety is based on Koelz 4399 from Bhadwar, Kangra, Punjab, India, at an altitude of 2000 feet, collected on May 5, 1933, and deposited in the United States National Herbarium in Washington.

Collectors refer to this plant as a tall woody herb or small shrub with bilaterally symmetric flowers and small leaves. They have encountered it in riverine Bombax-Caiba-Trewia nudiflora forests at 250--1650 m. altitude, in flower from March to May and in fruit in May. The corollas are said to have been "blue" on Stewart 16355 and Troth 684 and "lavender" on Koelz 4399.

Material of this taxon has been misidentified and distributed in some herbaria as typical C. odorata (Hamilt.) B. L. Robinson or its synonymous C. wallichiana Schau.

Citations: PAKISTAN: Northwestern States: R. R. Stewart 16355 (Ca--972844, N, W--1992163). NEPAL: Troth 684 (N, W--2826480). INDIA: East Punjab: J. R. Drummond 26818 (Ca--244688); Koelz 4399 (Mi--isotype, N--isotype, W--1608133--type). Uttar Pradesh: Bis Ram 2183 (N).

CARYOPTERIS PANICULATA C. B. Clarke in Hook. f., Fl. Brit. India 4: 597--598. 1885.

Synonymy: Clerodendron gratum Kurz ex C. B. Clarke in Hook. f., Fl. Brit. India 4: 597, in syn. 1885 [not C. gratum Benth., 1947, nor Wall., 1829]. Clerodendron grata Kurz ex Collett & Hemsl., Journ. Linn. Soc. Lond. Bot. 28: 111, in syn. 1890. Callicarpa n. 9 Hook. f. & Thoms. ex C. B. Clarke in Hook. f., Fl. Brit. In-

dia 4: 597, in syn. 1885. Callicarpa esquirolii Lévêillé, Feddes Repert. Spec. Nov. 9: 325 (Esquirol 754). 1911 [not C. esquirolii Lévêillé (op. cit. p. 456, Esquirol 72), 1911]. Callicarpa martinii Lévêillé, Feddes Repert. Spec. Nov. 9: 455. 1911. Caryopteris paniculata (Kurz) Clarke ex P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 176. 1932. Caryopteris paniculatas P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 164, sphalm. 1932. Callicarpa martinii Lévêillé ex Mold., Résumé 245, in syn. 1959. Callicarpa paniculata (Kurz) Clarke ex Mold., Résumé Suppl. 14: 7, in syn. 1966 [not C. paniculata Lam., 1785].

Bibliography: Wall., Numer. List 49 [=50], no. 1813. 1829; Kurz, For. Fl. Brit. Burma 2: 268. 1877; C. B. Clarke in Hook. f., Fl. Brit. India 4: 597--598. 1885; Collett & Hemsl., Journ. Linn. Soc. Lond. Bot. 28: 111. 1890; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 447 (1893) and imp. 1, 2: 1214. 1895; Briq. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 4 (3a): 178. 1895; Gamble, Man. Indian Timb., ed. 2, imp. 1, 544. 1902; Brandis, Indian Trees, imp. 1 & 2, 512--513 (1906), imp. 2a, 512--513 (1907), and imp. 3, 512--513. 1911; Lévêillé, Feddes Repert. Spec. Nov. 9: 325, 455, & 456. 1911; Fedde, Repert. Spec. Nov. 10: 64. 1912; Fedde & Schust., Justs Bot. Jahresber. 39 (2): 319. 1913; Fedde, Repert. Spec. Nov. Gesamtverz. 58. 1914; Lévêillé, Fl. Kouy-Tchéou 440. 1915; Fedde, Justs Bot. Jahresber. 39 (2): 1331. 1916; Brandis, Indian Trees, imp. 4, 512--513. 1921; Gamble, Man. Indian Timb., ed. 2, imp. 2, 544. 1922; Chung, Mem. Sci. Soc. China 1 (1): 229. 1924; P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 163, 164, & 176--178, pl. 32. 1932; Junell, Symb. Bot. Upsal. 1 (4): 115 & 118. 1934; Rehd., Journ. Arnold Arb. 15: 326. 1934; Dop in Lecomte, Fl. Gén. Indo-chine 4: 885--886. 1936; Rehd., Journ. Arnold Arb. 18: 243--244. 1937; Fletcher, Kew Bull. Misc. Inf. 1938: 405. 1938; Kanjilal, Des, Kanjilal, & De, Fl. Assam 3: 494 & 496. 1939; Biswas, Indian For. Rec., ser. 2, Bot. 3: 41. 1941; Mold., Suppl. List Inv. Names 2. 1941; Worsdell, Ind. Lond. Suppl. 1: 190. 1941; Mold., Alph. List Inv. Names 12. 1942; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 55, 56, 60, & 87. 1942; Erdtman, Svensk Bot. Tidsk. 39: 283--284. 1945; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 447 (1946) and imp. 2, 2: 1214. 1946; H. N. & A. L. Mold., Pl. Life 2: 58. 1948; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 128, 131, 137, & 178. 1949; Iljin, Acad. Sci. Bot. Inst. Dept. Repr. Mat. Hist. Pl. Veg. USSR. 3: 216. 1958; Anon., Kew Bull. Gen. Index 67. 1959; Mold., Résumé 160, 165, 168, 177, 214, 243, 245, 250, 272, & 445. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 447 (1960) and imp. 3, 2: 1214. 1960; Nath, Bot. Surv. South. Shan States 305. 1960; Deb, Bull. Bot. Surv. India 3: 314. 1961; Deb, Sengupta, & Melick, Bull. Bot. Soc. Bang. 22: 199 & 210. 1968; Mold., Résumé Suppl. 16: 9. 1968; Sahni, Indian For. 95: 346. 1969; Brandis, Indian Trees, imp. 5, 512--513. 1971; Mold., Fifth Summ. 1: 270--272, 282, 287, 294, 356, 408, 414, 415, 423, & 462 (1971) and 2: 856. 1971; Gamble, Man. Indian Timb., ed. 2, imp.

3, 544. 1972; Mold., *Phytologia* 28: 444. 1974; Lauener, *Notes Roy. Bot. Gard. Edinb.* 38: 483. 1980; Mold., *Phytol. Mem.* 2: 256--259, 271, 277, 284, 347, 374, 386, & 529. 1980; Mold., *Phytologia* 52: 429, 433, 453, 466, 467, & 469. 1983.

Illustrations: P'ei, *Mem. Sci. Soc. China* 1 (3): [Verbenac. China] pl. 32. 1932.

A straggling, spreading or "scandent", branching shrub or shrublet, 0.6--2.5 m. tall, or a "shrub-climber"; branches long, terete, flexuous or pendent, slender, pubescent or eventually glabrous; leaves decussate-opposite, odorous when crushed, eventually glabrous; petioles slender, short, 4--7 mm. long, canaliculate, pubescent; leaf-blades membranous, elliptic or ovate to ovate-lanceolate, 7--14 cm. long, 3--6.5 cm. wide, apically obtusely acuminate, marginally crenate or dentate, basally cuneate or usually obtuse to rounded, at first pubescent but glabrate when mature; secondaries about 5 per side; inflorescence axillary, small, densely many- [often 20--60-] flowered, subsessile, 1.2--3.7 cm. long, reddish, distinctly paniculate or thyrsoid or eventually glabrate, much shorter than the subtending leaves; peduncles, when present, dark-purple; rachis distinct; bracts and bractlets minute; inflorescence-branches purple; flowers small, scented, very short-pedicellate or sessile, arranged in cymes on raceme-like, one-sided, horizontally spreading or recurved, puberulous panicles; calyx about 2 mm. long, externally puberulent or glandular-hairy, 5--7-toothed, the teeth very small, lanceolate, apically subulate or long-acuminate; corolla deep-red or pinkish-purple to violet or lilac, 3--8 mm. long, about 3 times as long as the calyx, 5-lobed, externally pubescent, the tube often white, the lower lip apically entire or crisped; stamens 4, exserted; anther thecae apically divergent; style exserted; ovary externally pubescent; fruiting-calyx hardly accrescent, its segments small, lanceolate; fruit capsular, green, globose, about 2 mm. long and wide, externally pubescent and glandulose.

This species is apparently based on a J. D. Hooker collection from eastern Nepal and Griffith 6044 from Mishmee, both deposited in the Kew herbarium. Clarke (1885) also notes "Distrib. Ava" [Burma]. Fletcher (1938) asserts that the "type" is from Burma, but this is certainly incorrect.

Callicarpe martini is based on L. Martin 2562 from "Kouy-Tchéou; Environs de Hoang-Ko-chou, bord du gaver", collected in February of 1899 and deposited in the Edinburgh herbarium. Callicarpe esquirolii is based on J. Esquirol 754, also from Kweichow, but mis-cited by Lévillé (1915) as no. "654". The homonymous C. esquirolii, based by Lévillé on J. Esquirol 72, is Dichroa febrifuga Lour. in the Hydrangeaceae.

Collectors have found Caryopteris paniculate growing in light shade of roadside thickets, in open places on limestone ridges, scattered in the shade of hill forests, in bamboo-rich evergreen forests on limestone, and among secondary vegetation in evergreen forests on weathered granite, at 350--2553 m. altitude, in flower in January, March, April, October, and December, and in fruit in

January and March. Kingdon-Ward reports it "common in dense secondgrowth on old cultivated sites" in the Mishmi hills.

The corollas are said to have been "purple" on Shimizu & al. T.11773, "purplish" on Smitinand 181, "dull-purplish" or "crimson-purple" on Kingdon-Ward 18443, "reddish-purple" on Rock 7832, "lilac" on Henry 10408b, "whitish with a crimson lip" on Stewart 25556, "tube white, lobes pink" on Geesink & al. 8148, and "tube white, lobes violet" on Geesink & al. 8262.

Clarke (1885) remarks concerning this plant: "Otherwise much resembling C. grata; the whole panicle usually is red; but in C. grata it is often more or less red." He gives its general distribution as frequent in the subtropical forests of the Himalayas, at altitudes of 1000--4000 feet, of eastern Nepal to Burma. Kurz (1877) lists it from Ava and the Kakhya hills of Burma. Brandis (1906) gives its natural range as the "Outer eastern Himalaya to 6,000 feet, Assam, Manipur, Lushai hills, Shan hills, 5,000 ft., Hills east of Bhamo 4,000 ft., Yunnan 5-6,000 ft." Collett & Hemsley (1894) also list it from the Shan Hills plateau of Burma, at 5,000 feet altitude. Fletcher (1938) cites Kerr 3137 from Thailand, as well as crediting it to Burma and Yunnan (China).

P'ei (1932) cites only Martin 2562 from Kweichow and Forrest 9579 and Henry 10408a, 10408b, & 10408c from Yunnan -- he comments that "This species was erroneously characterized by Léveillé as Callicarpa martini who failed to observe the structure of the fruit. In vegetative characters and in general appearance it very much resembles Callicarpa, but it is easily distinguished by its dehiscent fruit and paniculate inflorescences. I find no essential difference between the Chinese and Indian specimens. It is distinguishable from all other species of the genus by its inflorescences, which are reddish and paniculate rather than cymose."

Rehder (1934, 1937) cites Esquirol 304 & 754 and Martin 2562 from Kweichow. He notes that "P'ei....cited Caryopteris paniculata C. B. Clarke with the parenthetical author '(Kurz)' which is apparently an error, since C. paniculata is a new name, not a new combination, and is based on Clerodendron Kurz, not. Wall."

Das and his associates (1939) list C. paniculata from Assam, the "N. E. F. Tract", Manipur, the Lushai Hills, and Mishmi Hills. Nath (1960) records it from the Southern Shan States of Burma, while Deb (1961) cites his no. 597 & 1885 from Manipur. The same author and his associates (1963) record it from Bhutan, where, they assert, it occurs 'scattered' and serves as a fodder plant, growing from 1050 to 1650 m. altitude, citing Deb 53 and Sengupta 975, 1005, & 1151. Sehni (1967) cites his no. 5164.

The Clerodendron gratum of Benth and of Wallich, mentioned in the synonymy (above), belong in the synonymy of Caryopteris foetida (D. Don) Thellung.

Junell (1934), on the basis of Henry 10408 in the Kew herbarium, says that the fruit of C. paniculata separates on maturity

into 4 nutlets, lying close together, and together forming a spherical fruit.

Erdtman (1945) classified C. paniculata in the same group of the genus with C. chosonensis, C. nepetaefolia, C. odorata, and C. siccanæa. He describes its pollen grains as tricolpate and subprolate.

The Callicarpa paniculata of Lamarck (1785) referred to in the synonymy (above), is a synonym of Chilanthus arborea (L. f.) Benth. in the Loganiaceae. The Clerodendrum gratum of Wallich (1829), also listed in the synonymy (above), is based on Wallich 1813 from Dehra Dun, India, collected in 1825 and deposited in the East India Company herbarium at Kew. Wallich remarks of it: "C. odorata affinis".

Lauener (1980) calls attention to the fact that the "later Callicarpa esquirolii [of L  veill  ], renamed Callicarpa leveilleana by Fedde, is Dichroa febrifuga Lour.....P'ei realised this but also confused them, [erroneously] relating the earlier C. esquirolii to Dichroa", while actually it is the one that is Caryopteris paniculata.

Material of Caryopteris paniculata has been misidentified and distributed in some herbaria under such names as C. grata Benth., C. grata Benth. & Hook. f., C. odorata (Hamilt.) B. L. Robinson, Callicarpa sp., Canthium sp., and Floscopa sp.

Citations: PAKISTAN: Northwestern States: T. Thomson s.n. [3-6000 ped.] (Mu--796). Poonch: R. R. Stewart 25556 (Kh, N). BHUTAN: W. Griffith 6044 (Mu--972--cotype, Mu--1679--cotype); J. Parkes s.n. [1885] (W--209330). INDIA: Sikkim: Craib 494 (Bz--18710); T. Thomson s.n. [Sikkim] (Bz--18705). Uttar Pradesh: Brandis 1603 (Mu); R. R. Stewart 14864 (N, W--1941708), 15776 (Ca--972845, N). BURMA: Upper Burma: Kingdon-Ward 18443 (N). CHINA: Y  nnan: Esquirol 754 (N--photo); A. Henry 10408a (N, N), 10408b (N), 10408c (W--457823); Rock 7832 (W--1758288). THAILAND: Bunchai 62 (Ac); Geesink, Hiepko, & Phengklae 8148 (Ac), 8262 (Ac); Koyama, Phengklae, Niyondham, Tamura, Okada, & O'Connor 15621 (Ac, N); Shimizu, Iwatsuki, Fukuoka, Hutch, Chaiglom, & Nalampoon 11773 (Ac); Smitinand 181 [Herb. Roy. For. Dept. 4802] (Ld). CULTIVATED: India: Herb. Hort. Bot. Calcutt. s.n. (Bz--18711). MOUNTED ILLUSTRATIONS: P'ei, Mem. Sci. Soc. China 1 (3): pl. 32. 1932 (Ld).

CARYOPTERIS SICCANE   W. W. Sm., Notes Roy. Bot. Gard. Edinb. 10: 18. 1917.

Synonymy: Caryoptueris siccan  a W. W. Sm. apud P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 180 sphalm. 1932.

Bibliography: W. W. Sm., Notes Roy. Bot. Gard. Edinb. 10: 18. 1917; A. W. Hill, Ind. Kew. Suppl. 6: 38. 1926; P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 163, 164, 178, & 180. 1932; Fedde & Schust., Justs Bot. Jahresber. 60 (2): 571. 1941; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 56 & 87. 1942; Erdtman,

Svensk Bot. Tidsk. 39: 283--284. 1945; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 131 & 178. 1949; Iljin, Acad. Sci. Bot. Inst. Dept. Repr. Mat. Hist. Fl. Veg. USSR. 3: 216. 1958; Mold., Résumé 168 & 445. 1959; Mold., Fifth Summ. 1: 287 (1971) and 2: 856. 1971; Mold., Phytol. Mem. 2: 277 & 529. 1980; Mold., Phytologia 52: 433 & 434. 1983.

Plants 60--75 cm. tall; stems angulate, spreading-hirsute, glandulose; leaves decussate-opposite; petioles to 7.5 cm. long, glandular-hirsute; leaf-blades thin-membranous when dry, broadly ovate, to 8 cm. long and 7 cm. wide, apically acute and mucronate, marginally coarsely serrate-incised with about 12 coarse ovate teeth on each side, basally cordate, more or less densely appressed-whitish-setose on both surfaces; inflorescence similar to that of C. chosenensis Mold. in form and size but narrower; peduncles, pedicels, and inflorescence-axis and -branches very densely hirsute and pilose with fulvous glandular-capitate hairs; bracts lanceolate or linear-lanceolate, less than 1 cm. long, somewhat decreasing in size upwards; calyx 4--5 mm. long, externally glandulose and hirsutulous (except for the base), bilabiate to about the middle, the upper lip 3-fid, the lower bifid; corolla similar to that of C. chosenensis, white, externally pilosulous; stamens exerted about 1.5 cm. from the mouth of the corolla-tube; style subequaling the stamens, apically bifid, the branches rather long and subulate; immature fruit rather fleshy.

This species is based on G. Forrest 12746 from open, dry, rocky pastures at lat. 26°45' N. in the Yung-pa mountains, altitude 9000 feet, Yunnan, China, collected in June, 1914, and deposited in the Edinburgh herbarium. Smith (1917) asserts that the "Species valde affinis C. divaricatae, Maxim. a qua foliis cordatis utrinque longiuscula setulosis, caulibus et ingloribentiae ramulis et pedunculis et pedicellis densissime glandulosis et hirsutis, floribus albis, calyce irregulari differt."

Erdtman (1945) asserts that the species belongs in the same natural group in the genus as C. chosenensis Mold., C. nepetaefolia (Benth.) Maxim., C. odorata (Hamilt.) B. L. Robinson, and C. paniculata C. B. Clarke.

Neither P'ei (1932) nor I have seen any material of this taxon.

CARYOPTERIS TERNIFLORA Maxim., Bull. Soc. Nat. Mosc. 54: 40--41. 1879.

Synonymy: Ocimum aureoglandulosum Van., Bull. Acad. Géog. Bot. 14: 171--172. 1904. Caryopteris ternifolia Maxim. ex Mold., Résumé 250, in syn. 1959.

Bibliography: Maxim., Bull. Soc. Nat. Mosc. 54: 40--41. 1879; Forbes & Hemsl., Journ. Linn. Soc. Lond. Bot. 26 [Ind. Fl. Sin. 2]: 265. 1890; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 1, 1: 447. 1893; Briq. in Engl. & Prantl, Nat. Pflanzenfam., ed. 1, 4 (3a): 178. 1895; Diels, Fl. Cent.-China 550. 1902; Van., Bull. Acad. Géog. Bot. 14: 171--172. 1904; Prain, Ind. Kew. Suppl. 3: 120. 1908; Dunn, Notes Roy. Bot. Gard. Edinb. 8: 154. 1913; Anon.,

Notes Roy. Bot. Gard. Edinb. 17: 12. 1929; P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 163, 164, & 174--176. 1932; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 56 & 87. 1942; Erdtman, Svensk Bot. Tidsk. 39: 283--284. 1945; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 2, 1: 447. 1946; P'ei, Bot. Bull. Acad. Sin. 1: 6--7. 1947; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 131 & 178. 1949; Iljin, Acad. Sci. Bot. Inst. Dept. Repr. Mat. Hist. Fl. Veg. USSR. 3: 216. 1958; Mold., Résumé 168, 250, 322, & 445. 1959; Jacks. in Hook. f. & Jacks., Ind. Kew., imp. 3, 1: 447. 1960; Mold., Fifth Summ. 1: 287 & 423 (1971) and 2: 575 & 856. 1971; Lauener, Notes Roy. Bot. Gard. Edinb. 38: 483. 1980; Mold., Phytol. Mem. 2: 277 & 529. 1981; Mold., Phytologia 52: 433 & 435. 1983.

A pubescent or cinerascens-villous, many-stemmed, low shrub or subshrub, about 45 cm. tall or usually smaller; stems subsimple; leaves decussate-opposite, short-petiolate; petioles 2--6 mm. long, pubescent; leaf-blades chartaceous, lanceolate-oblong to ovate or deltoid, 1.5--3.5 [rarely 4] cm. long, 1--2.5 cm. wide, apically obtuse or acute, marginally serrate with 6--10 large acute teeth per side, basally subcordate or truncate, pubescent and glandulose on both surfaces; secondaries about 6 per side; inflorescence axillary, in all the leaf-axils almost to the base of the stems, equaling the subtending leaves, bracteate, the cymes 3--few-flowered; peduncles 2-bracteate or bracteolate at about the middle; pedicels subequaling or longer than the calyx; calyx 4- or 5-lobed or -fid, pubescent and sparsely glandulose on both surfaces, the lobes unequal, apically acuminate and mucronate, about 1.6 cm. long, the upper 2 or 4 smaller and shorter, obovate, externally pilose, the 5th (lower) larger, 3--5.5 mm. long, rotund, unguiculate; stemens 4, inserted near the mouth of the corolla-tube, long-exserted, incurved, surpassing the pistil, about twice as long as the corolla, glabrous above, basally pilose; anther thecae divaricate; style long-exserted, apically bifid, glabrous, the branches acuminate; ovary externally densely villous; fruiting-calyx scarcely enlarged, about 7 mm. long or twice as long as the fruit; fruit about 3 mm. long, the valves coriaceous, obovoid, deeply navicular, externally densely short-hispid or hirsute dorsally, the ventral areole shorter, depressed; seed attached below the apex of a pseudo-septum, obovate; gynobase convex; embryo flat; cotyledons 2, rotund-ovate; radicle inferior.

This species is based on 2 unnumbered Piasezki collections from dry hills along the Han river in Shensi, western China, collected on April 11, 1875, and in far southern Kansu, collected on June 11 of the same year, both deposited in the Moscow herbarium. Maximowicz (1879), comparing this species with C. nepetaefolia (Benth.) Maxim., notes "Etiam haec spec. fructu carent, ita ut diagnosin. a me datam completam facere nequeam. Sed ante oculos est congener. junctionem Taucii nepetaefolii Bth. cum Caryopteride probans, inter illem et C. divaricatum m. fere media: Caryopteris ternifloraHabitu, pube, inflorescentia (tamen 3-flora) et corolla C. nepetaefolia, stylus C. divaricatae, fructus C. incanae Miq., sed pseudo-septum non circumcirca, sed uno latere solutum, ut in C.

mongolica, calyx etiam ultimarum duarum."

Forbes & Hemsley (1890) aver that C. terniflora is "Very variable in the inflorescence, the cymes being from two- to many-flowered and distinctly peduncled or almost sessile. Perhaps this should be included under C. nepetaefolia, Maxim., to which Mr. Franchet refers specimens collected by Father David." They cite Faber s.n. from Kiangsi, David s.n. and Henry 336, 336a, 855, 1230, 2038, 2726, & 7776 from Hupeh, and Piasezki s.n. from Shensi and Kansu. P'ei (1932) cites Henry 7776, Silvestri 1960, and Wilson 80 & 1772 from Hupeh, Giraldi s.n. from Kansu, and Forrest s.n. from Yunnan. He comments that "The reduction of Ocimum multiglandulosum Van. by Dunn was based on the examination of the type specimen."

P'ei (1947) records C. terniflora from Sikiang. Diels (1902) cites only unnumbered collection of He and of Piasezki from what he refers to as central China. Lauener (1980) cites Bodinier 1533 from Kweichow -- the type collection of Ocimum multiglandulosum Van. -- described as having been found "entre Hin y hien et Trou, borde d'une petite rivière profondément encaissée, quai du pont, plante herbacée ou sous-ligneuse, quelquefois très branchée, fleurs bleu pâle, 12 IV 1897."

Erdtman (1945) places this species in the same natural group in the genus as C. chosenensis Mold., C. nepetaefolia (Benth.) Maxim., C. odorata (Hamilt.) B. L. Robinson, C. paniculata C. B. Clarke, and C. siccanea W. W. Sm. Like those of C. nepetaefolia, its pollen grains are tricolpate, spheroidal, and with scattered spines.

Collectors have encountered C. terniflora at 800 m. altitude, in flower from April to June. Chow refers to it as a "vine". Material has been misidentified and distributed in some herbaria as the very similar C. nepetaefolia.

Citations: CHINA: Hupeh: Chow 587 (N); A. Henry 7776 (W--802145); Silvestri 1960 (Ca--387891, N); E. H. Wilson 80 (W--596310), 1772 (N). Kiangsi: A. Henry 686 (N, N--photo). Shensi: Giraldi s.n. [Leo-y-san, 11 Guigno 1897] (Ca--387855). Szechuan: Fang 70 (W--1626745). Yunnan: Forrest 13703 (8a), 16243 (S).

CARYOPTERIS TRICHOSPHAERA W. W. Sm., Notes Roy. Bot. Gard. Edinb. 10: 18. 1917.

Bibliography: W. W. Sm., Notes Roy. Bot. Gard. Edinb. 10: 18. 1917; A. W. Hill, Ind. Kew. Suppl. 6: 38. 1926; P'ei, Mem. Sci. Soc. China 1 (3): [Verbenac. China] 163, 164, & 171--173. 1932; Fedde & Schust., Justs Bot. Jahresber. 60 (2): 571. 1941; Mold., Known Geogr. Distrib. Verbenac., ed. 1, 56 & 87. 1942; Erdtman, Svensk Bot. Tidsk. 39: 283 & 284. 1945; Mold., Known Geogr. Distrib. Verbenac., ed. 2, 131 & 178. 1949; Iljin, Acad. Sci. Bot. Inst. Dept. Repr. Mat. Hist. Fl. Veg. USSR. 3: 216. 1958; Mold., Résumé 168 & 445. 1959; Mold., Fifth Summ. 1: 287 (1971) and 2: 856. 1971; Mold., Phytol. Mem. 2: 277 & 529. 1980; Mold., Phytologia 52: 433, 434, 469, 471, 488, & 490. 1983.

A small, aromatic, bushy undershrub, 0.4--1.2 m. tall; branch-

lets densely whitish- and crisped-tomentose; leaves decussate-opposite, strongly aromatic, glutinous; petioles 2--6 mm. long, whitish-tomentose; leaf-blades chartaceous, ovate or broadly ovate to oblong-ovate, to 3 cm. long and 2.5 cm. wide, apically rounded or subobtuse to obtuse, marginally coarsely serrate or crenate with 6--9 teeth, basally truncate or rounded-truncate, densely short-pilous with fulvous hairs above, very densely incanous-tomentose beneath, glandulose on both surfaces; secondaries 4 or 8 per side, prominent beneath; cymes subglobose, densely flowered, borne in the upper leaf-axils, densely white-villous; peduncles and pedicels short; calyx tubular, about 4 mm. long, externally long-villous with white hairs, glandulose, biparted, the lobes linear-oblong, apically acute; corolla blue or blue-violet to white, about 6 mm. long, 5-lobed, the tube cylindrical, almost 5 mm. long, externally villous, internally pubescent, the upper 4 lobes oblong, apically densely long-villous with violet hairs, the lower (5th) lobe larger, apically fimbriate; stamens exerted about 4 mm. or twice as long as the corolla-tube; filaments glabrous except for the villous insertion area; style glabrous; stigma bifid; ovary externally glabrous; capsule ovoid, about 3 mm. long and 2 mm. wide, externally glabrous.

This species is based on F. Kingdon-Ward 1048 from near Atuntsu on the Yünnan-Tibet boundary, at 12000--13000 feet altitude, collected in August, 1913, and deposited in the Edinburgh herbarium.

Collectors have encountered this plant in alpine meadows and on stony shrub-clad mountain slopes, at 3100--4000 m. altitude, in flower in July and August and in both flower and fruit in September. The corollas are described as having been "bluish" or "blue" on Rock 10013 and "white or very pale blue" on Forrest 19722.

P'ei (1932) cites Forrest 14477 & 19722 and Rock 10013 from Yünnan and notes that "This species is separated from other species of Caryopteris [sic] by the long hairs on the outside of the corolla tube and by both surfaces of the leaves being densely glandular, giving them a glutinous appearance." This condition is also seen in C. glutinosa Rehd.

Smith (1917) avers that C. trichosphaera differs from C. incana (Thunb.) Miq. in the long-villous upper corolla-lobes and "in other ways".

The Rock 23351 collection, cited below and determined as this species "vel aff." by Rehder has leaves very much like those of C. nepetaefolia Maxim. and C. terniflora Maxim. and may not actually belong here.

Erdtman (1945) places C. trichosphaera in the same natural group in the genus as C. forrestii Diels, C. glutinosa Rehd., C. incana (Thunb.) Miq., and C. mongholica Bunge. He asserts that "On pollenmorphological as well as on other evidence, Amethystea coerulesa L.....ought to be closely related with and, consequently,

placed in the same family as Caryopteris nepetaefolia and C. terniflora."

Material of C. trichosphaera has been misidentified and distributed in some herbaria as C. incana (Thunb.) Miq. and as C. tangutica var. brachydonta Hand.-Mazz. (this latter by Handel-Mazzetti himself).

Citations: CHINA: Sikiang: W. W. Smith 12243 (S). Yunnan: Rock 10013 (Ca--282184, N--photo, W--1213466), 23351 (Ca--517075, N, W--1512910).

ADDITIONAL NOTES ON THE ERIOCAULACEAE. LXXXV

Harold N. Moldenke

The last previous installment of these notes was published in *Phytologia* 42: 199--208 (1979).

ERIOCAULACEAE Lindl.

Additional synonymy: Eriocaulaceae Auct. anon., in herb.

Additional & amended bibliography: L., *Mant. Pl.* 2: 107 & 167. 1771; J. F. Gmel. in L., *Syst. Nat.*, ed. 13, imp. 1, 2: 206. 1791; Hedw., *Gen.* 51 & 365. 1806; R. Br., *Prodr. Fl. Nov. Holl.*, imp. 1, 1: 252--255. 1810; Nees in R. Br. *Fl. Nov. Holl.* 1: 109. 1810; Roxb., *Hort. Beng.*, imp. 1, 68. 1814; Kunth, *Syn.* 1: 262. 1822; Blume, *Cat. Gewass.*, imp. 1, 35. 1823; A. L. Juss in Cuvier, *Dict. Sci. Nat.* 45: 272. 1827; Reichenb., *Consp. Reg. Veg.* 1: 28 & 58. 1828; Dumort., *Anal. Fam.* 54--55. 1829; Link, *Handb.* 1: 135. 1829; Bartl., *Ord.* 36. 1830; Loud., *Hort. Brit.*, ed. 1, 36--37 & 541. 1830; Sweet, *Hort. Brit.*, ed. 2, 597 & 607. 1830; Ritg., *Marb.* 2: 120. 1831; Bonq., *Mem. Acad. Imp. Sci. St.-Petersb.*, ser. 6, 1: 1--74 & 601--656, pl. 1--19 & 39. 1831; Loud., *Hort. Brit.*, ed. 2, 36--37 & 541. 1832; Lindl., *Nix. Pl.* 36. 1833; Mart., *Nov. Act. Acad. Leopold.-carol. Nat. Cur.* 17 (1): 3, 7, 13, & 71. 1835; G. Don in Loud., *Hort. Brit.*, ed. 3, 36--37, 469, 541, 588, & 633. 1839; G. Don in Sweet, *Hort. Brit.*, ed. 3, 719. 1839; Endl., *Enchirid. Bot.* 67--68. 1841; Kunth, *Bericht. Akad. Berl.* 110. 1841; Reichenb., *Nom.* 42. 1841; Endl., *Enchirid. Bot. Suppl.* 2: 12. 1842; Brongn., *En. Genr.* 12. 1843; Meisn., *Pl. Vasc. Gen.* 2: 312. 1843; Spach, *Hist. Vég. Phan.* 13: 140. 1846; A. L. Juss. in Orbigny, *Dict. Univ. Hist. Nat.* 12: 417. 1849; Lemaire in Orbigny, *Dict. Univ. Hist. Nat.* 5: 397. 1849; Lindl., *Veget. Kingd.*, ed. 3, 122, 797, 802, 818, & 830, fig. 82. 1853; Miq., *Fl. Ind. Bat.* 3: 523. 1857; Miq., *Fl. Ind. Bat. Suppl.* 1: 268. 1860; Lindl. & Moore, *Treas. Bot.*, ed. 1, 1: 462 (1866) and ed. 2, 1: 462. 1870; Ulrich, *Internat. Wörterb.*, ed. 1, 83. 1871; Pfeiffer, *Nom. Bot.* 1 (2): 1150, 1239--1240, & 1861 (1874), 2 (1): 5 (1874), and 2 (2): 914. 1874; Ulrich, *Internat. Wörterb.*, ed. 2, 83. 1875; Lindl. & Moore, *Treas. Bot.*, ed. 3, 1: 462. 1876; J. G.